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CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD UNIVERSITY.

New Series. — No. XIII.

By B. L. Robinson.

I. Revision of the North American and Mexican species of *Mimosa*.

II. Revision of the North American species of *Neptunia*.

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Presented March 9, 1898.

I. — REVISION OF THE NORTH AMERICAN AND MEXICAN SPECIES OF MIMOSA.

The greater part of our North American species of Mimosa barely attain our southwestern borders. They are the northernmost representatives in the New World of a large and difficult chiefly tropical group, and their affinities must accordingly be sought among more southern forms. In revising for the *Synoptical Flora* the North American species of the genus, the writer has, therefore, been constantly compelled to trace their southward extension and study their relationships among the Mexican and even Central American species. This has necessitated the examination of critical and imperfectly identified material to such an extent, that a general revision of the Mexican and Central American, as well as the North American species, has seemed the simplest solution of the difficulties. Bentham's well-known monograph * of the genus, — which must always stand as one of the classics of botanical taxonomy, — is as clear and excellent as ever, but has become somewhat antiquated by nearly a quarter of a century of unprecedented activity in exploration. The large and rich collections of Messrs. Pringle, Palmer, J. Donnell Smith, Nelson, Rose, Brandegee, Millspaugh, L. C. Smith, C. L. Smith, Pittier, Conzatti, Dugès, Hartman, and Lloyd, are all of later date. They have added a wealth of new material, but it has been identified at different times and places and, as is natural, with varying degrees of accuracy; so that in this, as in every other large group, the true results of modern exploration can only be brought to light by revision and monographic study. The specimens cited in the following synopsis are chiefly those of recent collectors, and

* Trans. Linn. Soc. xxx. 388–441.

little effort has been made to repeat the older citations of specimens and localities, which are duly recorded in Hemsley's Biol. Cent. Am. Bot.

Wherever possible, Bentham's paper, the result of more than thirty years' study of the genus, has been taken as a basis of arrangement. But his series of *Rubicaules* seems an unfortunate and artificial aggregation of species without close affinities. Several of these are here placed with the *Schrankioideæ*, and *M. Berlandieri* is referred to what is believed to be its natural position as a variety of *M. asperata*. It is doubtful whether Bentham ever saw *M. Ervendbergii*. At all events he did not recognize what is now evident, namely, that it was founded upon two distinct plants.

The construction of a satisfactory key to the species of *Mimosa* is well nigh impossible. Except in the number of their stamens the flowers are too uniform to furnish many good characters. The inflorescence passes gradually from capitate to spicate, the number of leaflets varies astonishingly upon the same individual, and the spines are singularly inconstant, being well developed or obsolete in plants which appear in all other respects identical. Therefore the key here offered, although the result of considerable study and experimentation, must be used with due caution. *M. albida*, *acanthocarpa*, and *biuncifera* appear to be the types of polymorphous aggregates of intergrading forms. Aside, however, from these species and several of their close allies, the species within the limits of the present paper are pretty clearly marked and show little tendency to intergrade.

Besides the material in the Gray Herbarium, the writer has been kindly permitted to examine and borrow from the material of *Mimosa* in the Herbarium of the N. Y. Botanical Garden. Mr. John Donnell Smith has lent his rich representation of the Central American *Sensitivæ*, and Dr. J. N. Rose of the U. S. National Museum, has sent for examination a large number of most interesting forms from Mexico, collected chiefly by himself and Mr. Nelson, and containing several new and well marked species. Further material has also been sent to the writer from Lower California by Mr. and Mrs. T. S. Brandegee, from Honduras by Dr. Gustavo Niederlein and from New Mexico by Miss Mulford. Upon request several specimens have been examined and compared by the staff of the Royal Gardens at Kew. For all of these favors, which have contributed much to the completeness of the present revision, the writer here expresses grateful appreciation.

The generic limits ascribed to *Mimosa* in this paper fully coincide with those of Bentham and other recent writers, so that it is needless

to repeat here the well-known generic characters. A word may be said regarding the derivation of the name. At least it may be stated that no satisfactory etymology has thus far been suggested. The traditional derivation from *mimus*, a mimic actor, which has for many years been handed down in our text-books, was early given by Tournefort. The name, however, dates back of Tournefort, and his explanation is in several regards unsatisfactory. In the first place no ordinary rules of word-composition would lead to the formation of a Latin substantive ending in *osa* from another ending in *us*. Nor if such derivation could be accomplished does it explain the traditionally long *o* of the penultimate syllable. Prof. J. B. Greenough has suggested a possible connection with a theoretical (although never actually used) active participle μιμοῦσα from μιμέομαι. Further light upon this subject is desired, but the writer has not had an opportunity to follow the matter historically beyond a few of the more accessible works. Any derivation from μιμώ, an ape, seems also to offer philological difficulties.

No authentic specimen of the doubtful M. ARCUATA, Mart. & Gal., has been seen, but from the original description, Bull. Acad. Brux. x. pt. 2, 308, it would seem near to, if not synonymous with, *M. biuncifera*, Benth.

M. GEMINATA, DC. (Prodr. ii. 427; A. DC. Calques des Dess. t. 205), is wholly dubious.

Subg. 1. ASTATANDRA, n. subg. Flowers polygamous in the same head; staminate flowers with twice as many stamens as segments of the corolla; perfect flowers with stamens of the same number as the segments of the corolla.

1. M. tequilana, WATS. Low branching tawny-hirsute annual, armed with weak scattered spines: pinnæ 1 pair; leaflets one or two pairs upon each secondary rhachis,* obovate, rounded and mucronate at the apex, thin, sensitive, glabrous above, appressed-villous with tawny hairs beneath: flowers in small ovoid heads: corolla 3–4-toothed: calyx obsolete: legume armed on edges and valves with weak straight spreading spinescent bristles. — Proc. Am. Acad. xxii. 409 (1887). — Hillsides, Tequila, Jalisco, *Palmer*, no. 378, August to September, 1886, and in the same locality, *Pringle*, no. 4596. Placed in the *Modestæ* by Dr. Watson, who seems not to have noted the two kinds of flowers with differing andrœciums.

* When the number of leaflets is given in this paper, it applies merely to those upon a single secondary rhachis, not to those of a whole leaf.

Subg. 2. EUMIMOSA, DC. (as modified by Benth.). Flowers perfect or polygamous: stamens in all equal in number to the lobes of the corolla. — Mém. Lég. xii. 418, & Prodr. ii. 425, in major part; Benth. Trans. Linn. Soc. xxx. 388, 389.

* Pinnæ 1 pair; leaflets very large, ovate or ovate-lanceolate to obovate, 1 or more commonly 2 pairs upon each secondary rhachis, but the inner leaflet of the lower pair mostly much reduced or even wanting. — Series *Sensitivæ*, Benth. l. c. 388, 390.

← Stem glabrous or in *M. manzanilloana* slightly strigose.

→ Unarmed shrubs or trees.

2. **M. sesquijugata**, J. D. SMITH. Low shrub branched from the base: leaflets elliptic-oblong or lance-oblong, rounded or acutish at the apex, coriaceous and reticulate-veiny, glabrous and lucid above, appressed-setose but soon glabrate and glaucous beneath, 15 to 20 mm. long: petioles slender, essentially glabrous: peduncles downwardly strigose: flowers purplish, tetramerous. — Bot. Gaz. xiii. 74 (1888). — In rock-fissures near Santa Rosa, Dept. Baja Verapaz, Guatemala, altitude 1525 m., July, 1887, *von Tuerckheim* (no. 1327 of J. D. Smith's valuable Guatemalan set).

3. **M. Goldmanii.** Small tree, 3 to 6 m. high: glabrous throughout except for the setose-ciliate margins of the leaflets, stipules, and bracts: stems woody, covered with grayish brown bark: petioles filiform; leaflets obovate-oblong, obtuse or rounded, mucronate, rather thin, green above, perfectly glabrous and slightly glaucescent beneath, 12 to 18 mm. long, 6 to 8 mm. broad; margin ciliate with conspicuous appressed or incurved stramineous bristles; rhachises devoid of bristles; stipules subulate, attenuate, slightly ciliate: peduncles filiform, usually equalling or often exceeding the petioles, fascicled on short or undeveloped secondary axes; heads numerous, globose, 12 mm. in diameter; flowers 4-merous, purplish white: legume unknown. — Collected by *Nelson & Goldman* between Juchitan and Chivela, Oaxaca, at 50 to 275 m. altitude, 1895, no. 2628 (herb. Gray and herb. U. S. Nat. Mus.). This species differs from any of the other Mexican and Central American species of the *Sensitivæ* in its perfectly glabrous peduncles and petioles, also by having the lower surface of the leaflets devoid of setæ as well as any trace of pubescence. It is evidently near the South American *M. glaucescens*, Benth. and *M. angusta*, Benth., but these from description have larger leaflets and are woody only at the base.

↔ ↔ Shrub, moderately armed with small scattered light-colored recurved spines: margin of legume bearing very short incurved bristles; valves strigillose and also finely pubescent.

4. **M. manzanilloana,** Rose. Branches sometimes slightly strigose, mostly glabrous, terete, slender, at length verrucose: leaflets oblong, acutish or obtusish and mucronate, glabrous above, setose on the edge and lower surface; petioles slender, glabrous, slightly armed: peduncles slender, 2.5 cm. or more in length: buds considerably exceeding the very small and inconspicuous bracts. — Contrib. U. S. Nat. Herb. i. 326. — Manzanillo, Mexico, December, 1890, *Palmer*, no. 905. Near the common *M. floribunda*, Willd., but essentially glabrous and of much more slender habit.

↔ ↔ ↔ Scandent shrub copiously armed with recurved more or less 4-seriate spines: margin of legume covered with long straight acicular bristles; valves glabrous.

5. **M. Velloziana,** Mart. Glabrous except for the strigose bristles of the stipules and leaflets: petioles stout, copiously armed with retrorse spines: peduncles short, 12 to 16 mm. in length: bracts in the young heads conspicuous, setose-ciliate, equalling or exceeding the buds. — Herb. Fl. Bras. 185, & Flora, xxii. pt. 1, Beibl. 9; Benth. Trans. Linn. Soc. xxx. 390. *M. viva*, Vell. Fl. Flum. Ic. xi. t. 33 (where leaflets are figured with too fine and copious pubescence), not L. — Isthmus of Panama, *Seemann*, no. 100 (in herb. Gray), and at Chagres, 19 February, 1850, *Fendler*, no. 91. Also, acc. to Hemsley, in pastures at Chojojo, near Mazatenango, Guatemala, *Bernoulli*, no. 60, and at Guanacaste, Costa Rica, *Oersted*. (Also S. Am.) No. 4133 of Captain J. D. Smith's distribution, collected at Malpais, Dept. Santa Rosa, Guatemala, and determined as this species by Micheli, differs in its less armed stems and petioles, longer peduncles, and inconspicuous floral bracts. It is undoubtedly distinct from *M. Velloziana*, but the specimen lacks fruit.

← ← Stem at least toward the apex covered with soft usually spreading as well as bristly pubescence or rarely in *M. floribunda* merely strigillose.

↔ Slender, herbaceous or suffrutescent: leaflets obovate to oblong, rounded and mucronulate at the apex, appressed-villous or setulose upon both surfaces: legume copiously setose on valves and margin.

6. **M. debilis,** H. & B. Scarcely armed: pubescence fine, spreading: petioles long and slender, unarmed: pods copiously setose on margins and valves. — H. & B. in Willd. Spec. iv. 1029; Benth. l. c. 391. *M. notata*, Steud. Flora, 1843, 758, & *M. Hostmanni*, Benth. in Hook. Lond. Jour. Bot. v. 84, acc. to Benth. — Trop. S. Am.

Var.? **panamensis**, Benth. Annual or a slender undershrub, armed with scattered recurved spines: leaflets oblong, narrower than in the typical form, the larger 18 mm. long, 6 mm. broad. — Trans. Linn. Soc. xxx. 391. — Panama, in meadows near Nata, *Seemann*, no. 98 (in herb. Gray); also at Boruca, Costa Rica, *Pittier*, no. 4554 (distrib. as *M. sensitiva*).

↔ ↔ Armed shrubs with ovate-lanceolate or ovate-oblong, acutely or at least bluntly pointed leaflets: margin of legume bearing long straight spreading spinescent bristles; valves sparingly covered with weak straight appressed bristles.

M. sensitiva, L. Spines of stem numerous (rarely few), somewhat 4-seriate, very short, recurved: petioles copiously armed; leaflets lanceolate, thickish, glabrous or puberulent above, appressed-setulose beneath. — Spec. i. 518 (Breyne, Cent. 31, t. 16); Benth. Trans. Linn. Soc. xxx. 390, & in Mart. Fl. Bras. xv. pt. 2, 305. — Brazil, *Claussen* (Mart. Herb. Fl. Bras.) 1079 (in herb. Gray). This S. American species has been credited to Costa Rica by Micheli (Bull. Soc. Bot. Belg. xxx. 294) on the basis of Pittier's nos. 23, 1279, 1279 bis, 1447, 1448, 3013, but the writer, who (through the kindness of Captain J. Donnell Smith) has seen specimens of all these numbers except 1448, would regard them as mere forms of *M. albida*, H. & B.

↔ ↔ ↔ Armed shrubs with leaflets mostly acutish but sometimes rounded at the apex: legumes finely strigillose with short appressed or often incurved hairs both on margin and valves.

7. **M. albida**, H. & B. A polymorphous species: stems armed with scattered (not seriate) spines, and covered with spreading usually copious often tawny hairs: leaflets acutish rarely obtuse or rounded, covered on both surfaces with fine white appressed hairs which are denser and often mixed with strigose bristles beneath: pedunculate heads axillary or aggregated in long terminal almost naked racemes. — H. & B. in Willd. Spec. iv. 1030; Kunth, Mimos. 2, t. 1. *M. sensitiva*, Lodd. Bot. Cab. t. 249; Micheli, Bull. Soc. Bot. Belg. xxx. 294; not L. — S. Mexico and Centr. Am., southward to Peru. San Luis Potosi, *Pringle*, no. 3970; Sinaloa, *Rose*, no. 1731 (peculiar form with broad very obtuse leaflets); Jalisco, *Palmer*, no. 693 (coll. of 1886); Orizaba, *F. Müller*, no. 172, *Bourgeau*, no. 2861; Oaxaca, *Nelson*, nos. 792, 2070, *L. C. Smith*, no. 792; Vera Cruz, *Nelson*, nos. 63, 479; Huasteca, *Ervendberg*, no. 1; Guatemala, *Hayes*, *J. D. Smith*, nos. 300, 2307, 6118 (in part passing to var. *floribunda*); Costa Rica, *Oersted* no. 10, *J. D. Smith*, nos. 5765, 8975, *Pittier*, nos. 23, 1279, 1279 b, 1447, 3013,

Tonduz, no. 1568; Honduras, *J. D. Smith*, no. 5215, *Niederlein*. In a considerable series of specimens it has been impossible to find any constant or satisfactory characters or combinations of characters to separate this species from the following forms here included as varieties. The differences of pubescence, which are striking in extremes, undergo the most gradual and complete intergradation and appear to be correlated with no other important distinctions. It is probable that all the forms here given cross freely when occurring in the same region.

Var. strigosa (*M. strigosa*, Willd. l. c.). Leaflets acutish, beset upon both surfaces with coarser strigose hairs. — Costa Rica, *Oersted*, no. 8.

Var. floribunda (*M. floribunda*, Willd. l. c. 1031). Leaflets acutish, glabrous above, covered below with appressed setæ: pedunculate heads mostly collected in almost naked terminal racemes: corolla puberulent to tomentulose. — Jalisco, *Palmer*, no. 705 (coll. of 1886); Orizaba, *Botteri*, no. 569, *Seaton*, no. 141; Vera Cruz, *Bourgeau*, no. 1541, *C. L. Smith*, nos. 1142, 1716, 1719, *Nelson*, nos. 72, 160; Puebla, *Nelson*; Guatemala, *Hayes*, *J. D. Smith*, no. 3308. Captain Smith's no. 5764 from Costa Rica, and Kerber's nos. 119 and 353 from S. Mexico are good examples of transitions between *M. albida* and its var. *floribunda*. It is probable also that leaflets which are at first pubescent above are sometimes glabrate in age.

Var. euryphylla. Scarcely armed: leaflets broad, obovate, rounded and merely mucronulate at the apex, glabrous and somewhat lucid above, appressed-villous beneath: corolla glabrous. — Collected by *E. W. Nelson* in the valley of Jiquipilas, Chiapas, altitude 675 to 850 m., 16 to 18 August, 1895, no. 2927 (in herb. U. S. Nat. Mus.).

Var. glabrior. Stem and branches nearly glabrous: leaflets acute or acutish, glabrous above, sparingly setose beneath: corolla glabrous. — *M. Velloziana*, Micheli in J. D. Smith, Pl. Guatem. &c. iv. 49, not Mart. — Coll. *Heyde & Lux* at Malpais, Dept. Santa Rosa, Guatemala, altitude 1230 m., no. 4133 of J. D. Smith's distrib.

** Pinnæ 1 to several pairs; leaflets 3 to several pairs, smaller.

+ Stems herbaceous (sometimes becoming slightly ligneous in *M. pudica*), hirsute with spreading often tawny hairs; pinnæ 1 or 2 (closely approximated) pairs.

++ Leaflets ovate or obovate: fruit finely pubescent upon the valves.

8. M. Skinneri, Benth. Low, much branched hirsute annual: leaves with 2 or 4 digitately arranged secondary rhachises; leaflets obovate, 3 to 8 pairs, crowded, obtuse, very sensitive, glabrous above, appressed tawny-villous below: infra-stipular spines stramineous, straight:

legume about 3-jointed, finely pubescent upon the valves and strongly setose on the margin. — Benth. in Hook. Lond. Jour. Bot. v. 85, & Trans. Linn. Soc. xxx. 392. — Borders of Oaxaca and Chiapas, *Nelson*, no. 2858; Guatemala, *Skinner*, acc. to Benth., *J. D. Smith*, nos. 3758, 6132; Costa Rica, Ujaras, *Oersted*, acc. to Hemsl.

9. **M. Pittieri**, MICHELI. Pinnæ always 2 pairs; leaflets 5 to 6 pairs, ovate, ciliate: infra-stipular spines recurved, caducous: peduncles axillary, solitary, exceeding the petioles: bracts nearly or quite as long as the corolla. — Bull. Soc. Bot. Belg. xxx. 294 (whence description is compiled). — Near Rio Jesus Maria Puntarenas, Costa Rica, *Pittier*, no. 502. Not seen by the writer.

↔ ↔ Leaflets oblong.

= Margin of legume bearing very short recurved hairs; valves pubescent and often strigillose.

10. **M. affinis**, ROBINSON. Pinnæ 1 pair; leaflets 8 to 12 pairs, acutish: peduncles shorter than the petioles. — Bot. Gaz. xvi. 341. — Grassy land near Mazatlan, *W. G. Wright*, nos. 1218, 1265; hillsides near Tequila, *Pringle*, no. 5453; Colima, *Palmer*, no. 131 (coll. of 1897); wet soil near Cuernavaca, Morelos, *Pringle*, no. 6662.

= = Valves of the legume glabrous; margins setose with straight spreading bristles: pinnæ 1 or more commonly 2 approximate pairs.

11. **M. pudica**, L. The well known sensitive plant of cultivation, very variable as to pubescence: occasional scattered spines as well as the infra-stipular usually present. — Spec. i. 518; Benth. Trans. Linn. Soc. xxx. 397, where extensive synonymy is given. — Common throughout tropical America from S. Mexico southward; Orizaba, *Bourgeau*, no. 2400; Vera Cruz, *Bourgeau*, no. 1759, *C. L. Smith*, no. 999, *Nelson*, nos. 159, 393; Costa Rica, *J. D. Smith*, no. 5767; Honduras, *J. D. Smith*, no. 5219, *Niederlein*; Panama, *Fendler*, no. 96, *Seemann*, no. 102. (Also extensively naturalized in the warmer countries of the Old World and said to be spontaneous in some parts of our Southern States.)

← ← Stems decidedly ligneous.

↔ Spines infra-stipular or scattered: pinnæ 1 or 2 pairs: fruit (where known) rather narrow, not exceeding 8 mm. in breadth.

= Leaflets 13 to 25 mm. long.

a. Branchlets and peduncles scabrous-pubescent.

12. **M. tricephala**, CHAM. & SCHLECHT. Spines straight: leaflets 10 to 15 pairs, ovate-oblong, 1–2-nerved, glabrous above, strigose beneath, 1.2 cm. long. — Linnæa, v. 591; Benth. Trans. Linn. Soc.

xxx. 394 (whence foregoing description). — Mexico near Actopan, *Schiede*, acc. to Benth. (Trop. Am.).

b. Branchlets and peduncles smooth or merely puberulent.

1. Leaflets ovate or broadly oblong.

13. M. lactiflua, Delile. Shrub: spines few, scattered, straight: leaflets 3 to 5 pairs, obliquely ovate or oblong, somewhat rigid, glaucescent beneath, pinnately veined, glabrous on both surfaces; margins slightly cartilaginous, incurved, ciliate with rigidulous stramineous setæ: flower 4-merous: legume unknown. — Delile acc. to Benth. Trans. Linn. Soc. xxx. 393, & in Mart. Fl. Bras. xv. pt. 2, 311. — Regarding the Mexican occurrence of this species Bentham (from whom the preceding description is compiled) says, "Delile's specimens were from the Botanical Garden of Montpellier, supposed to be of American, perhaps Brazilian origin. In the Berlin Herbarium there is a specimen from Mexico which agrees with the detailed description I had made (now inserted in the Flora Brasiliensis) except that the leaflets are under instead of over ½ in. long." While this species is known to me only from description I would refer to it Mr. Nelson's no. 1845, collected 9 km. above Dominguillo, Oaxaca, altitude 1375 to 1700 m.

2. Leaflets rather narrowly oblong.

14. M. sicyocarpa. Shrub, 1 to 2 m. high, sparingly armed with short scattered recurved spines: branches terete: petioles slender, glandless, 5 or 6 cm. in length, usually armed below the middle with a single short recurved spine: pinnæ a single pair, 1 dm. in length; leaflets 9 to 11 pairs, oblong, oblique at the base, subacute, mucronate, dull green and finely soft-pubescent upon both sides, slightly paler beneath, 20 to 25 mm. in length, a third as broad: peduncles axillary, often geminate, finely pubescent, unarmed: flowers 4-merous: legumes lance-oblong, 25 to 30 mm. long, 8 mm. broad, covered upon margin and valves with weak straight spreading stramineous setiform spines. — Collected by *E. W. Nelson* on roadside between San Sebastiana and the summit of the mountain known as the Bufo de Mascota, Jalisco, altitude 1550 m., 20 March, 1897, no. 4101. The bristling pods crowded in dense globular heads recall the fruit of the star-cucumber.

15. M. cærulea, Rose. Stems unarmed, nearly or quite glabrous, 6 to 9 dm. high, straight and terete: leaflets narrowly oblong, 12 mm. in length, acutish, mucronate, green on both sides, appressed setose-ciliolate, minutely appressed-puberulent or sparingly strigose varying to glabrous, reticulate-veiny: peduncles fascicled: flowers purplish,

4-merous, staminate and perfect: legume with glabrous valves; margin armed with very short incurved prickles. — Contrib. U. S. Nat. Herb. v. 141. — On foot hills and in mountain woods above Cuernavaca, *Pringle*, nos. 6200, 6385 (distrib. by clerical error as *cærulescens*); and between Guichocovi and Lagunas, Oaxaca, *Nelson*, no. 2746. A beautiful and very distinct species.

= = Leaflets 8 to 10 mm. long.

a. Branchlets and peduncles strigillose or covered with a sparing sub-appressed scabrous pubescence.

16. **M. Nelsonii.** Scabrous-puberulent shrub, 3 to 6 dm. high: branches woody, covered with a dull gray bark; branchlets warty-roughened: petioles short, scabrous-puberulent; pinnæ 1 pair; leaflets 5 to 11 pairs, broadly oblong, rounded at both ends, appressed-ciliate, of firm subcoriaceous texture, slightly lucid, 7 to 9 mm. long, 4 mm. broad, when young finely pubescent upon both sides but sometimes early glabrate, or perhaps glabrous at first, often (especially the lowest one) strigillose beneath: peduncles considerably exceeding the petioles, somewhat pubescent and strigillose: globose heads 10 mm. in diameter; bracts shorter than the buds, inconspicuous; flowers 4-merous, perfect and staminate: fruit light-colored, oblong, 2 cm. in length, 6 mm. in breadth, 3–4-jointed, hispid throughout with spreading curved bristles. — Collected in fruit by *Dr. Edward Palmer* near Acapulco, between October, 1894, and March, 1895, no. 88, and in flower by *E. W. Nelson*, between San Geronimo and La Venta at 665 m. altitude, 13 July, 1895, no. 2775 (in herb. U. S. Nat. Mus.). A species nearly related to the Lower Californian *M. Xanti*, but differing in its more sparing and scabrous pubescence, and much shorter bracts. Palmer's specimen is armed with straight scattered spines, while Nelson's is unarmed, yet their identity cannot be doubted.

b. Pubescence of branchlets and peduncles more copious, tawny-tomentose, spreading, softer in character.

17. **M. Xanti,** Gray. Leaflets 4 to 9 pairs, oblong, pubescent upon both sides, cinereous beneath, scabrous-ciliolate upon the margin, about 8 mm. long: bracts exceeding the buds and conspicuous in the young heads: legume 2–4-jointed, stipitate, 2 cm. long, covered with fine pubescence and short scattered setæ both upon valves and margins. — Proc. Am. Acad. v. 157; Benth. Trans. Linn. Soc. xxx. 396; Brandegee, Proc. Calif. Acad. Sci. ser. 2, iii. 133. — Lower Calif. near Cape St. Lucas, *Xantus*, no. 29; *Brandegee*, no. 183.

↔ ↔ Spines numerous, small, recurved, somewhat 4-seriate: pinnæ 4 to 5 pairs: fruit 2 cm. broad.

18. **M. leptocarpa,** Rose. A straggling shrub with long lax glabrous branches: pinnæ 4 to 5 pairs, often alternate; leaflets 8 to 11 pairs, oblong, obtuse, minutely puberulent (under lens): legume 12 or 15 cm. long, 2 cm. broad; replum armed with a few short firm recurved prickles. — Contrib. U. S. Nat. Herb. i. 326. — Manzanillo, *Palmer*, no. 1341 (December, 1890). An anomalous species known only in fruit, so that even its generic affinities are subject to some doubt. Dr. Rose has found the remains of five stamens clinging about the base of the legumes. The fruit is of course extraordinarily large for *Eumimosa*, but seems to possess the distinctive characters of the genus.

Subg. 3. Habbasia, DC. (as extended by Benth.). Stamens twice as many as the lobes of the corolla. — DC. Mém. Lég. xii. 418 & Prodr. ii. 428; Benth. Trans. Linn. Soc. xxx. 389, 411.

* Flowers in cylindrical lax or dense elongated or rarely (in *M. adenantheroides*) subcapitate spikes. — *Leptostachyæ*, Benth. l. c. 389, 412.

← Leaflets 1 to 5 rarely 7 pairs, elliptical, ovate, or obovate, not twice as long as broad.

↔ Leaflets and younger parts tomentose or tomentulose.

= Leaflets 15 mm. or more in length.

19. **M. spirocarpa,** Rose. Showy tomentose shrub, sparingly armed with scattered spines: pinnæ 2 to 4 pairs; leaflets 1 to (less frequently) 3 pairs, broadly obovate: short-peduncled spikes numerous, rather slender, 7.5 cm. in length, purplish turning white: corolla 5-lobed: pods small, light-colored, tomentulose, soon coiled through 1 to 1½ revolutions. — Contrib. U. S. Nat. Herb. iii. 316, t. 11. — Sinaloa, Culiacan, *Palmer*, no. 1476, H., and later between Rosario and Colomas, *Rose*, no. 1606. Notwithstanding the exceptional form of the fruit there can be no doubt that Dr. Rose has correctly determined the affinities of the species.

20. **M. guatemalensis,** Benth. Fulvous-tomentose shrub armed with a few scattered straight spines: pinnæ 3 to 6 pairs; leaflets 3 to 6 pairs, elliptical: spikes 5 cm. long on peduncles half as long; flowers silky-villous: legume still unknown. — Bot. Sulph. 89, & in Hook. Lond. Jour. Bot. v. 89. *Inga? Guatemalensis*, Hook. & Arn. Bot. Beech. 419. — W. Mexico, Cerro de Pinal, *Seemann*, Tepic, *Barclay* (acc. to Hemsl.), *Lamb*, no. 583, near Colomas, *Rose*, no. 3200; Realejo, Nicaragua, *Sinclair*.

= = Leaflets 7 to 10 mm. in length.

21. **M. distachya**, Cav. Covered throughout with a fine close puberulence or tomentulose pubescence: spines stout, recurved, solitary on the internodes, directly beneath the leaves or removed from them or rarely absent: pinnæ about 3 pairs; leaflets 2 to 5 pairs, obovate, not crowded, finely and closely pubescent upon both surfaces: spikes geminate from the axils, pedunculate, rather short and dense. — Icon. iii. 48, t. 295; Benth. Trans. Linn. Soc. xxx. 417. — Mazatlan, Sinaloa, *Rose*, no. 1393; Cordillera of Oaxaca, *Galeotti*, no. 3240, acc. to Benth. (Also S. Am.). Dr. Rose's specimen shows the hitherto unknown legume to be oblong, 3.6 cm. in length, about 5-seeded, sharply tipped, puberulent and unarmed or armed on the margin with a few scattered short weak prickles.

↔ ↔ Leaflets and younger parts of stem glabrous or merely puberulent.

= Valves of fruit hispid with numerous tawny bristles.

22. **M. Brandegei**. A spreading shrub, 2 to 3 m. high: spines single or double, stout, recurved, borne mostly near the middle of the internode: pinnæ 3 to 4 pairs: leaflets 2 to 4 pairs, obovate, nearly concolorous, glabrous above, puberulent (under lens) beneath, 9 to 15 mm. long, rounded but slightly mucronate at the summit; rhachises sparingly pubescent: spikes single or fascicled by 2's or 3's, peduncles 3 or 4 cm. long: flowers white or nearly so: young fruit narrowly oblong, minutely pubescent and also bristly-setose. — *M. distachya?* Brandegee, Proc. Calif. Acad. Sci. ser. 2, iii. 133, not Cav. — San José del Cabo, Todos Santos, La Paz, Lower Calif., *Brandegee*, no. 184 (herb. Gray, herb. Brandegee).

= = Fruit glabrous, unarmed.

23. **M. laxiflora**, Benth. Shrub, glabrous or nearly so, with striate branches and stoutish recurved spines: pinnæ 3 or 4 pairs; leaflets 3 to 5 pairs, obovate, glabrous or early glabrate, 7 to 10 mm. long, about 3-nerved: spikes solitary or geminate, lax; flowers essentially glabrous, white: pods oblong, thin, glabrous, stramineous, unarmed, about 8-seeded. — Benth. in Hook. Lond. Jour. Bot. v. 93, & Trans. Linn. Soc. xxx. 418. ? *Acacia prosopoïdes*, DC. Prodr. ii. 460; A. DC. Calques des Dess. t. 210. — Gattunas, Sierra de la Union, near the southern boundary of New Mexico, *Schott;* mountains of N. W. Sonora, *Pringle*, 12 August, 1884; S. W. Chihuahua, *Palmer*, no. 41 (1885); near Guaymas, *Palmer*, no. 169 (coll. of 1887); Sonora Alta, *Th. Coulter*, no. 522, acc. to Hemsl.

Var. zygophylloides. Leaflets reduced to a single terminal pair on each secondary rhachis, 4 to 6 mm. long, slightly rounder, thicker, and more veiny than in typical form. — Collected in flower at Manzanillo, Colima, by *Prof. M. E. Jones*, 25 June, 1892, no. 193 (herb. U. S. Nat. Mus.). The peculiar arrangement of the leaflets here corresponds to that in *M. Rosei*, characterized below, but the leaflets themselves, even at full maturity, are not more than a third as large.

24. M. Rosei. Unarmed, glabrous: branches striate: stipules subulate; petiole and primary rhachis glandless, about 13 cm. long; pinnæ 4 pairs; secondary rhachises stipellate and geniculate near the base, 12 to 14 mm. long; leaflets, mostly a single pair, rhombic-obovate, obtuse, glabrous, deep green above, not lucid, somewhat paler green beneath, 15 to 22 mm. long, two thirds as broad: spikes axillary, solitary, (including short peduncle) 6 cm. long in fruit: legume (scarcely mature) linear-oblong, acuminate, flat, thin with firmer margin, about 8-jointed, 7 cm. long, 5 mm. broad; the segments sharply limited by straight transverse lines. — Collected in young fruit by *Dr. J. N. Rose*, at Balaños, Jalisco, 10 to 19 September, 1897, no. 2919.

= = = Fruit tomentulose but not setiferous.

25. M. purpurascens. Habit, thorns, &c., much as in *M. laxiflora*: pinnæ 4 to 5 pairs; leaflets about 4 pairs, 4 to 6 mm. long, puberulent (under lens) below; rhachises puberulent: spikes solitary or geminate, 4 cm. long including short peduncle; flowers subsessile, distinctly purplish: calyx finely pubescent: pods about 5-seeded, oblong, acute, 3.5 cm. long. — *M. laxiflora*, Brandegee, l. c., at least in part, not Benth. — Lower Calif., at La Paz, *Brandegee*, 4 February, 1890, no. 185, in flower, and at Purisima, 13 February, 1889, in fruit, secured by same collector. Some old fruit collected by *Xantus* in 1873, appears to be of the same species. Type in herb. Brandegee. Although near *M. laxiflora*, this plant cannot be satisfactorily referred to it.

← ← Leaflets 4 to 15 (rarely 20) pairs, linear to elliptic-oblong, mostly more than twice as long as broad: fruit not exceeding 1 cm. in breadth: shrubs, mostly armed.

↔ Pods thin, sometimes setose but not tomentose; segments much broader than long.

26. M. polyantha, Benth. Shrub 1 to 2 m. high: spines stout, recurved, solitary beneath the axils: leaves not fully developed at time of flowering: pinnæ 2 to 3 pairs; leaflets 4 to 8 pairs, oblong, small, glabrous above, sparingly appressed-pubescent or glabrous beneath, about 5 mm. long: spikes numerous, 4 or more fascicled at each node of the

flowering branches; flowers glabrous: fruit oblong, 4 cm. long, 8 mm. broad, about 8-seeded, abruptly acuminate at each end, thin, lucid, hispid on margin and valves with short spreading setæ. — Benth. in Hook. Jour. Bot. iv. 410, & Trans. Linn. Soc. xxx. 417. — Acatlan, *Andrieux* (acc. to Benth.); Tomellin Cañon, Oaxaca, altitude 775 m. *Pringle*, no. 4635 (distrib. as *M. disticha*); Acaponeta, Tepic, *Rose*, no. 1475; also in W. Mexico, *Palmer*, 1891–1892, without number. The fruit of this species was unknown to Benth. The still sparing material available has the fruit most often hispid and that form of pod is accordingly assumed to be typical. A doubtful form with glabrous somewhat more numerous and relatively narrower leaflets has been collected without fruit in Oaxaca by *L. C. Smith*, no. 202, and *Nelson*, no. 2629.

Var. levior. Fruit nearly or quite free from hispidity: otherwise indistinguishable from the plant here regarded as typical. — Collected in W. Mexico, 1891–1892, by *Dr. Edward Palmer*, but without number or more precise data. Types in herb. Gray and herb. U. S. Nat. Mus.

↔ ↔ Pods tomentose, armed or unarmed; segments subequilateral or longer than broad.

= Stems not glandular.

a. Calyx subtruncate, very short, 0.8 mm. long, a quarter the length of the corolla: spikes long.

27. M. Palmeri, Rose. Large shrub, unarmed or with occasional infra-stipular spines: pinnæ 9 to 15 pairs; leaflets 7 to 10 pairs, elliptic-oblong, not crowded, glabrous above, puberulent beneath: spikes (including peduncles) 7 to 10 cm. long, numerous in showy terminal leafless panicles; flowers purplish, puberulent: young fruit linear-attenuate, tomentulose. — Contrib. U. S. Nat. Herb. i. 99. — Near Alamos, *Palmer*, no. 628; collected in flower in September.

28. M. fasciculata, Benth. Shrub with stout angulate branches and tawny or rusty-tomentose branchlets: spines short, broad-based, dark red, mostly infra-axillary, commonly grouped by 2's or 3's: leaves when well-developed 2 to 3 dm. in length; pinnæ 11 to 20 pairs; leaflets 8 to 15 pairs, oblong, villous-tomentose upon both sides: spikes crowded in a terminal raceme; flowers silky-villous: pods narrow, attenuate, ferrugineous-tomentose and hispid with numerous reddish brown rigidulous setæ. — Benth. in Hook. Lond. Jour. Bot. v. 88, & Trans. Linn. Soc. xxx. 414; Wats. Proc. Am. Acad. xxii. 409. *M. cinerea*, Herb. Pavon acc. to Benth. l. c. *Acacia fasciculata*, Kunth, Mim. 75, t. 23. — Originally collected near Guanajuato by *Humboldt & Bonpland;* later by *Karwinski* without exact locality; on hillsides near

Guadalajara, Jalisco, *Palmer*, no. 449 (coll. of 1886) in fruit, *Pringle*, nos. 2914, 4459, in flower; near Tamazulapam, Oaxaca, *Nelson*, no. 1962.

Var. **malacocarpa**. Fruit fulvous-tomentose but nearly or quite devoid of prickles. — Collected by *E. W. Nelson*, between Amolac, Puebla, and Sochi, Guerrero, altitude 1200 to 1260 m., 28 November, 1894, no. 2023, and by *J. N. Rose*, at Bolaños, Jalisco, September, 1897, no. 2917. Indistinguishable from the typical form except by its strikingly different fruit. The original specimens of *Acacia fusciculata* described by Kunth were not in fruit, so it is impossible to say which form was the original one. Under the circumstances it seems best to adopt as the typical form the one of which the fruit was first described (see Wats. l. c.).

b. Calyx more distinctly toothed, 1 to 1.5 mm. long, a third to half the length of the corolla: spikes shorter and thicker.

1. Spines mostly dark-colored, not greatly compressed.

29. **M. cœlocarpa**. Shrub, armed with small scattered straight spines; bark of branches gray: pinnæ 6 to 8 pairs; leaflets oblong, acutish, green on both sides, appressed-puberulent upon margin and lower surface, 3 mm. long, eccentrically 1-nerved, thin; stipules setaceous: spikes mostly geminate in the upper axils, moderately loose; peduncles slender, 14 to 18 mm. long: buds obovoid: flowers white with roseate tinge: corolla 4-parted: stamens 1 cm. in length: pods oblong-linear, acute at both ends, unarmed, tomentulose, 4 or 5 cm. long, 5 mm. broad; margins thickened; segments distinctly concavo-convex, the seed more or less prominent within the concavity. — Collected at Topolobampo, Sinaloa, Mexico, by *Dr. Edward Palmer*, 15 to 25 September, 1897, no. 187. Near the next, but distinguished by its peculiar fruit, longer peduncles, looser spikes and thinner leaflets. Types in herb. Gray and herb. U. S. Nat. Mus.

30. **M. Wrightii**, Gray. Shrub, armed with scattered spines: branchlets tomentulose, angulate; leaves much as in the last but thicker, varying from tomentose to subglabrous: peduncles shorter, 1 to 1.5 cm. long: spikes short and at first very dense; buds subglobose, tomentose: pods rusty-tomentose, unarmed; margins thick; segments not distinctly concavo-convex. — Pl. Wright. ii. 52; Benth. Trans. Linn. Soc. xxx. 417. — Mountains of Arizona, *Palmer*, *Pringle*, *Toumey*, nos. 37, 38; Sonora, *Wright*, no. 1041 (type); Chihuahua, *Pringle*, no. 359, *Hartman*, no. 732. A greener and usually less tomentose plant than the next species.

2. Spines light-colored, conspicuously compressed and very broad at the base.

31. **M. dysocarpa**, Benth. Shrub with stems angled: pinnæ 6 to 12 pairs; rhachis elongated, slightly armed with small scattered spines; leaflets 7 to 16 pairs, densely silky-villous almost tomentose, somewhat cinereous, oblong, 4 to 6 (to 8) mm. in length, acutish: spikes at first dense, at length laxer, 2.5 to 7.5 cm. long exclusive of the much shorter peduncle, subpaniculately aggregated at the summit of the stem: calyx and pods tomentose, the former 2 mm. or more in length, turbinate below; the latter 2.5 to 5 cm. long, about 6-seeded, more or less constricted between the seeds, sharply acuminate, unarmed or provided with a few short curved spines on one edge. — Benth. in Gray, Pl. Wright. i. 62, & Trans. Linn. Soc. xxx. 414, t. 66; Gray, Pl. Wright. ii. 51; Coult. Contrib. U. S. Nat. Herb. ii. 97. — Rocky hills, W. Texas, *Wright*, no. 163; New Mexico, *Thurber*, no. 1104, *Wright*, no. 1040; *Miss Mulford*, nos. 387, 696; Arizona, *Rothrock*, no. 511, *Rusby*, no. 113a, *Lemmon*, no. 2690; State of Durango, Mexico, *Palmer*, no. 418 (coll. of 1896).

= = Stem covered with minute sessile or stipitate glands.

32. **M. adenantheroides**, Benth. Stem puberulent, glandular-punctate: spines recurved: pinnæ about 9 pairs; leaflets about 9 pairs, obliquely oval, obtuse, 3-nerved, pubescent, pale beneath: spikes fascicled by 3's; flowers pubescent. — Benth. in Hook. Lond. Jour. Bot. v. 88; & Trans. Linn. Soc. xxx. 416. *Acacia adenantheroides*, Mart. & Gal. Bull. Acad. Brux. x. pt. 2, 310. — On calcareous and gneissic mountains of Sola and Yolotepeque, Cordillera of Oaxaca, at 2153 to 2307 m., *Galeotti*, no. 3208. Description compiled. Near this species must stand two differing yet doubtfully distinct plants collected in the mountains of Oaxaca by *Nelson*, and represented by his nos. 2078 and 1479. Both differ from the above description in having only 3 to 5 pairs of pinnæ, but without fuller knowledge of Bentham's species can neither be identified with it nor positively excluded from it.

+ + + Leaflets 15 to 40 pairs, oblong: fruit not 1 cm. in breadth: unarmed tree.

33. **M. puberula**, Benth. Pinnæ 5 to 10 pairs; leaflets 15 to 40 pairs, crowded, oblong, rigid, obtuse, 4 to 5 mm. long: spikes axillary, 4 to 5 cm. long: fruit stipitate, flat, pubescent. — Benth. in Hook. Lond. Jour. Bot. v. 88, & Trans. Linn. Soc. xxx. 413. — Zimapan, *Th. Coulter*, and "New Spain" Herb. Pavon, acc. to Benth. Description compiled.

← ← ← ← Leaflets 15 to 40 pairs: fruit over 1.5 cm. broad: armed shrub, not glandular.

34. **M. platycarpa**, BENTH. Thorns scattered, recurved: pinnæ 6 to 10 pairs; leaflets 15 to 25 pairs, linear, 2 to 3 mm. long: spikes slender, loosely flowered: fruit stiped, flat, glabrous, nearly 4 cm. in length. — Trans. Linn. Soc. xxx. 417. — Guatemala, *Skinner* (acc. to Benth.). Description compiled.

← ← ← ← ← Leaflets 22 to 40 pairs, linear-oblong: stem arborescent; branches armed, glandular-pubescent.

35. **M. Cabrera**, KARST. Small tree armed with scattered straight spines: pinnæ 5 to 8 pairs; leaflets 18 to 35 pairs, 5 mm. long, concolorous, pubescent upon both sides: flowers somewhat verticillate in long flexuous interrupted spikes: legume flat, pubescent. — Fl. Colomb. ii. 63, t. 132; Benth. Trans. Linn. Soc. xxx. 416. ? *M. tenuiflora*, Poir. Suppl. i. 82, not Benth. ? *Acacia tenuiflora*, Willd. Spec. iv. 1088. — ? San Salvador, *Wendland* (acc. to Benth. & Hemsl.); Valley of Comayagua, Honduras, *Niederlein*. Northern S. America. If Bentham is right in stating that this species is the same as *Acacia tenuiflora*, Willd., there seems no reason why Poiret's *Mimosa tenuiflora* should not be taken up for it upon grounds of priority, but on a comparison of an authentic specimen of *M. Cabrera*, with Willdenow's original description there appear to be several striking differences rendering real identity impossible. *M. Cabrera* is called by the Spanish Americans "carbon" or "carbonal" and its wood is, acc. to Niederlein, used to make charcoal.

* * Flowers in globose, ovoid or (in *M. monancistra*) subcylindric heads.

← Shrubs or trees with hard wood, rarely (in *M. Lemmoni* and *M. Grahami*) only undershrubs: branchlets mostly armed with scattered or infra-stipular never seriate spines: pubescence never strigose: corolla not striate.

↔ Pubescence not rufous: pods setose or spinose upon the valves.

= Pod oblong or moniliform, not over 1 cm. broad.

36. **M. monancistra**, BENTH. Low shrub with flexuous grayish often striate branchlets: internodes armed by a single short recurved subaxillary spine (which is frequently some distance beneath the leaf insertion): pinnæ 2 to 3 pairs; leaflets mostly 4 pairs, oblong or elliptical, obtuse, 3 to 6 mm. long, appressed-pubescent: heads ovoid or short-cylindric; flowers silky-tomentulose: pods 3 to 5 cm. long, acuminate, 3–7-jointed hispid with stramineous setæ or weak spines. — Pl. Hartw. 12, & Trans. Linn. Soc. xxx. 425: Wats. Proc. Am. Acad. xvii. 350. — W. Texas, on the Rio Pecos, *Havard*, no. 66; Mexico, Tamaulipas, *Berlan-*

dier, nos. 831, 2251, 3145; Coahuila, *Gregg*, *Palmer*, no. 290 (coll. of 1880), *Pringle*, no. 217; Guanajuato, *Dugès;* Aguas Calientes, *Hartweg*, no. 70 (type); Jalisco, *Rose*, nos. 3572, 3665; Michoacan, *Pringle*, no. 3733; Oaxaca, *L. C. Smith*, no. 18.

37. **M. Emoryana,** Benth. Branchlets tomentulose; spines single but borne usually at the side of (not often beneath) the axils: leaves small, appressed-tomentulose and cinereous; rhachis scarcely over 6 mm. in length; pinnæ about 2 pairs, crowded, 8 mm. long; heads globose: young fruit as in the last. — Trans. Linn. Soc. xxx. 426. — Gravelly hills near the Cibolo of the Rio Grande, *Bigelow*, 28 July, 1852, no. 312, which was the type number, although it was cited in the original description by clerical or typographical error as no. 302; also foothills of the Chisos Mts., W. Texas, *Havard*, no. 18.

38. **M. minutifolia,** Rob. & Greenm. Shrub armed with straight or slightly recurved infra-stipular subaxillary or scattered spines: pinnæ 10 to 20 pairs; leaflets numerous, not over 1 mm. in length, pubescent upon the edge and lower surface: valves tough, oblong, not constricted between the seeds, apparently falling away entire, at first somewhat canescent-tomentulose as well as covered with tawny or rufescent setæ. — Am. Jour. Sci. ser. 3, l. 150. — Rocky hills, Rio Blanco, Jalisco, *Pringle*, no. 5142, and near Colotlan, *Rose*, no. 2673; the specimens of both collections are in fruit.

= = Pod lanceolate, 2 cm. broad.

39. **M. eurycarpa.** Small tree, 4 to 6 m. high, glabrous or puberulent, sparingly armed with scattered spines or unarmed: branches reddish brown; branchlets green, angulate: stipules setaceous: leaflets narrowly oblong, 6 to 8 mm. in length, 2 mm. in breadth, 1-nerved, rounded at the apex, deep green upon both surfaces: heads numerous, small, fasciculate, racemose at the ends of the branchlets; bracts short scarcely showing in the young heads: calyx fully half the length of the glabrous white 5-lobed corolla: stamens 10: pods large, lance-oblong, acuminate, 6 to 7 cm. long, 2 cm. broad; stipe long and slender; valves echinate, separating entire from the replum, which is weakly armed on one side. — Collected by *E. W. Nelson* between Guichocovi and Lagunas, Oaxaca, at 175 to 275 m. altitude, 27 June, 1895, no. 2741; also between La Venta and Niltepec, at 60 m. altitude, 14 July, 1895, no. 2798. Mr. Nelson's no. 955 without fruit is probably the same.

↔ ↔ Pubescence not rufous: pod surrounded by a lacerate wing; valves neither setose nor spinose.

40. **M. lacerata,** Rose. Stout shrub, 15 to 25 dm. high, armed with pairs of dark brown laterally compressed very broad-based infra-stipular spines: pinnæ 5 to 9 pairs; leaflets 8 to 17 pairs, canescent-puberulent: legumes brown, oblong, obtuse at the apex and base, 4 to 5 cm. long, 1.5 cm. broad, including the lacerate wings. — Contrib. U. S. Nat. Herb. v. 141. — Vicinity of Piaxtla, Puebla, at 1200 m. altitude, *Nelson*, no. 2008; also on limestone hills between Tehuacan, Puebla, at 1850 m. altitude, *Pringle*, no. 6247 (distributed by clerical error as *M. lacerans*).

↔ ↔ ↔ Pubescence rufous, dense.

41. **M. mollis,** Benth. Pinnæ 4 to 5 pairs; leaflets 6 to 10 pairs, oblong, villous upon both sides, 8 to 12 mm. long: heads fascicled at the nodes; flowers villous. — Benth. in Hook. Jour. Bot. iv. 408, & Trans. Linn. Soc. xxx. 429. — Mexico, *Andrieux*, no. 400. Species not seen by the writer; the description compiled.

42. **M. Galeottii,** Benth. Tall shrub or small tree, 3.5 to 4.5 m. high, with stoutish flexuous branches: branchlets densely covered with short rufous thickish hairs: spines infra-stipular and geminate or solitary: leaves subsessile, 6 to 10 cm. long; pinnæ 20 to 25 pairs, 10 to 18 mm. long; leaflets about 16 pairs, 2 to 3 mm. long, nearly glabrous except upon the shortly ciliate margins: peduncles fascicled in the axils, 14 to 17 mm. long, copiously and retrorsely pubescent with thick tawny hairs: flowers yellowish turning roseate: pod (acc. to Benth.) broadly linear, glandular-puberulent, setose-prickly upon the sutures, almost naked on the valves. — Benth. in Hook. Lond. Jour. Bot. v. 92, & Trans. Linn. Soc. xxx. 429. *Acacia hirta*, Mart. & Gal. Bull. Acad. Brux. x. pt. 2, 318. — Forests of Yolotepeque, western Cordillera of Oaxaca, altitude 2460 m., *Galeotti*, no. 3165. It cannot be doubted that this species is also represented by Mr. Pringle's no. 6384 collected on mountain sides above Cuernavaca at 2150 m. altitude. This number was unfortunately distributed as *M. lacerans*, Rose, n. sp.?

↔ ↔ ↔ ↔ Pubescence not rufous: pod (still unknown in *M. tenuiflora*) often armed upon the margin, but neither surrounded by a wing nor setose upon the valves.

= Pinnæ a single pair; leaflets 1 pair on each secondary rhachis, obovate, or suborbicular, 2 to 4 mm. in length.

43. **M. zygophylla,** Benth. Small much-branched shrub with single intra-nodal spines: petioles short, thickish, somewhat flattened;

small leaflets obovate or suborbicular, 2 to 4 mm. in diameter: pods unarmed or rarely bearing a few marginal spines. — Benth. in Gray, Pl. Wright. i. 61, & Trans. Linn. Soc. xxx. 425. — Common on limestone hills of Northern Mexico; near Monterey, *Gregg*, no. 182; Saltillo, *Wislizenus*, no. 300, *Gregg;* Parras, *Palmer*, no. 296 (coll. of 1880); Carneros Pass, *Pringle*, nos. 2851, 3703.

= = Pinnæ 1 pair; leaflets 2 to 4 pairs, obovate or suborbicular, 2 cm. in length.

44. M. leucænoides, Benth. Tall shrub or small tree, 3 to 4.5 m. in height, unarmed: petioles rather short (1 cm. in length): leaflets at first puberulent, later glabrate, lucid, subcoriaceous, veiny: heads axillary, racemose and subcorymbose at the ends of the branches: legume 5 to 6.5 cm. long, 4 to 8 mm. broad, unarmed. — Benth. in Hook. Lond. Jour. Bot. v. 89, & Trans. Linn. Soc. xxx. 421. — Zimapan, *Th. Coulter*, and Mexico without locality, *Karwinski*, acc. to Hemsl. *Pringle's* no. 3750 collected on limestone ledges at Las Palmas, San Luis Potosi, doubtless represents this species.

= = = Pinnæ 1 to ∞ pairs; leaflets 2 to ∞ pairs, oblong to elliptic, mostly small.

a. Branchlets, petioles, and rhachises glabrous even under lens.

1. Spines infra-stipular, geminate.

45. M. tenuiflora, Benth. Stipules setaceous: pinnæ 1 to 3 pairs, obliquely oblong: peduncles somewhat longer than the leaves, the upper ones racemose. — Benth. in Hook. Lond. Jour. Bot. v. 92, & Trans. Linn. Soc. xxx. 429. — Zimapan, Mexico, *Th. Coulter;* Mexico without further locality, *Karwinski*, acc. to Benth. Species not seen by the writer; the description compiled.

2. Spines (with rare exceptions) single, borne at the side of the axil and 30° to 120° removed from it.

46. M. borealis, Gray. Shrub, 1.5 to 2.5 m. high: leaves small; pinnæ mostly a single pair; leaflets 3 to 5 pairs, oval, 2 to 4 mm. long, two thirds as broad, thickish, glaucescent: peduncles very slender, 12 to 18 mm. long: legumes 2.5 cm. or more long, unarmed or more often armed on one or both edges; segments about 4, rounded at the sides. — Pl. Fendl. 39, & Pl. Wright, i. 61 (excl. var.), ii. 51; Benth. Trans. Linn. Soc. xxx. 426, t. 66. *M. fragrans*, Gray, Pl. Wright, ii. 51, not Pl. Lindh. — W. Texas, *Wright, Hayes*, no. 220, *Havard*, no. 68; New Mexico, *Fendler*, no. 181, *Wright*, no. 1038, northward to Cimarron Valley, Indian Terr., *Carleton*, acc. to Holzinger. Perhaps only a variety of the next.

47. M. fragrans, Gray. Fragrant shrub, 6 to 12 dm. or more

high, in technical characters too close to the last preceding species, but with much more developed foliage: pinnæ 1 to 3 pairs, oblong, 2 to 3 cm. in length; leaflets in about 6 somewhat remote pairs, oblong, 4 to 6 mm. in length: legumes curved, about 5 cm. long, slightly or not at all armed; segments 5 to 7. — Pl. Lindh. pt. 2, 182, as to plant of Lindh.; Benth. Trans. Linn. Soc. xxx. 426. — Thickets on rocky soil, S. and W. Texas, *Lindheimer*, nos. 606, 607, *Wright*, no. 1037, *Reverchon*, no. 717 * (of Curtiss' distrib.), *Havard*, no. 63, *Heller*, no. 1594.

b. Branchlets, petioles, or at least rhachises puberulent to tomentose.

1. Pods thin and soft in texture, wholly unarmed, 4 to 5 mm. broad, velvety tomentose.

48. **M. calcicola.** Shrub 6 to 9 dm. high: branches gray, flexuous, armed with solitary recurved subaxillary spines: pinnæ 2 to 3 pairs; leaflets elliptic-oblong, 2 to 3 pairs, subdistant, at least not crowded, pale green, puberulent, concolorous, 3 to 5 mm. long: peduncles axillary, solitary, puberulent, 8 mm. long; flowers pubescent, white or nearly so: pods 3 to 4 cm. in length, about 6-seeded, slightly constricted between the seeds, light colored, permanently canescent-tomentose. — Collected by *C. G. Pringle*, on calcareous plains of Tehuacan, State of Puebla, at 1525 m. altitude, 29 July, 1897, no. 6765 (distributed as *M. depauperata*?)

2. Pods coriaceous, more or less armed upon one or both edges.

o Pinnæ 1 to 2 or rarely 3 pairs; leaflets 2 to 6 pairs.

49. **M. depauperata,** Benth. Low rigidly branched shrub, becoming 1 m. high, finely canescent-puberulent: spines single, subaxillary: leaves very small; pinnæ a single pair; leaflets 2 or 3 pairs, ovate, not 2 mm. in length; common petiole 6 mm. long, somewhat flattened: peduncles 5 mm. in length: flowers canescent-pubescent: young pods stipitate, 6-jointed, canescent-pubescent upon the valves, aculeate upon one edge, distinctly constricted between the seeds. — Benth. Pl. Hartw. 13, in Hook. Jour. Bot. iv. 410, & Trans. Linn. Soc. xxx. 425. *Acacia canescens*, Mart. & Gal. Bull. Acad. Brux. x. pt. 2, 312. — Plains of Actopan, Mexico, *Graham* (fragmentary specimen in herb. Gray); Mexico without locality, *Karwinski* acc. to Benth.; also from hills near San Juan del Rio, Queretaro, *Pringle*, no. 6352, showing young fruit as above described. A specimen collected on a gravelly mesa near Presidio, Texas, *Havard*, no. 75, has mature glabrate constricted pods (7 mm. in breadth) and the reduced foliage of this species, but somewhat longer peduncles and smoother flowers. Near to and

perhaps confluent with this species are the plants referred by Dr. Gray to his *M. borealis* var.? *Texana*, Pl. Wright, i. 61 (*Wright* no. 159, also no. 10, coll. of 1851, and *Gregg*, no. 51). They differ from *M. borealis* in their puberulent rhachises and subaxillary spines, but are to a certain extent intermediate between *M. depauperata* on the one hand and *M. acanthocarpa* and *M. biuncifera* on the other. Without better and more copious material their affinities and proper status cannot be more exactly determined.

50. M. Pringlei, Wats. Branching shrub armed with mostly geminate infra-stipular spines: pinnæ 1 to 2 pairs; leaflets 2 to 4 pairs, elliptical or oval, pale green: flowers canescent-puberulent; bracts inconspicuous: pods glabrous, 2 cm. long, acute, slightly armed on one edge or unarmed. — Proc. Am. Acad. xxi. 452. — Near Big Cañon of the Rio Grande, W. Texas, *Havard*, no. 12, and on rocky hills near town of Chihuahua, *Pringle*, in fruit, October, no. 545, and in flower, August, no. 724.

° ° Pinnæ (at least on well developed leaves) 3 to ∝ pairs; leaflets mostly numerous.

\+ Pods 7 to 10 mm. broad, mostly obtuse or obtusish.

52. M. Grahami, Gray. Stem nearly glabrous: primary rhachises (nearly 1 dm. in length) sparingly pubescent; pinnæ about 10 pairs; leaflets 15 to 20 pairs narrowly oblong, of firm texture, paler and prominently veined beneath, entirely glabrous upon both surfaces, usually devoid even of ciliation: pods glabrous at maturity. — Pl. Wright. ii. 52. — Mountain valleys of Northern Sonora, near the Arizonan boundary, *Wright*, no. 1042.

53. M. Lemmoni, Gray. Apparently an undershrub, covered with soft and canescent pubescence or tomentum: pinnæ about 6 pairs; primary rhachis 6 to 10 cm. long; secondary rhachises often 4 cm. in length; leaflets elliptic-oblong, pubescent-tomentose, 5 to 7 mm. in length: heads numerous, globular, borne on filiform geminate peduncles which are sometimes grouped in showy compound racemes: pods even at maturity canescent-tomentose. — Proc. Am. Acad. xix. 76. — Huachuca Mountains, Arizona, *Lemmon*, nos. 2692, 2693, *Pringle*, no. 7, *Toumey*, no. 39. Too near the next, from which it differs chiefly in its smaller spines, less woody stems, and larger less crowded leaflets.

54. M. acanthocarpa, Benth. Stems and branches decidedly ligneous: spines mostly numerous, slender or stout, usually paired and infra-stipular, with or without a third one beneath the leaf-insertion; scattered spines sometimes present also: leaves (except on young and

vigorous shoots) seldom exceeding 4 cm. in length; pinnæ 4 to 10 pairs; leaflets oblong, crowded, ciliate, pubescent, 4 to 5 mm. long: pods oblong, straight or nearly so, armed on one or both edges, canescent-tomentose, at least when young, obtusish but mucronate-tipped. — Benth. in Hook. Jour. Bot. iv. 409, & Trans. Linn. Soc. xxx. 428; Wats. Proc. Am. Acad. xvii. 350. *M. biuncifera*, Torr. Bot. Mex. Bound. 61, in part, acc. to Wats. Bibl. Index, 243. — Mexico without locality, *Graham;* San Luis Potosi, *Schaffner*, no. 624; Jalisco, *Rose*, no. 2572; Durango, *Rose*, no. 3491, and (acc. to Benth.) nos. 301 and 308 of Mex. Bound. Survey. Bourgeau's no. 486, referred to this species, should be placed in *M. biuncifera*.

++ Pods 4 to 6 mm. broad, mostly acute or acutish.

55. M. prolifica, WATS. Shrub armed with long slender straight geminate spreading infra-stipular spines: leaf-rhachis 4 to 6 cm. in length, pubescent, armed with hooked spines; pinnæ about 8 pairs; leaflets 8 to 18 pairs, oblong, acutish, ciliate or quite glabrous, 3 mm. in length: pods copious, falcate, narrowed to a point at both ends, armed upon the ventral (convex) suture. — Proc. Am. Acad. xxi. 452. — Rocky hills near Chihuahua, *Pringle*, no. 208 in flower, no. 372 in fruit. A species too near the variable *M. biuncifera*, and distinguished from it chiefly by its larger leaves and long slender straight spines.

56. M. biuncifera, BENTH. Straggling shrub or small tree: spines usually broad, laterally compressed, paired and infra-stipular, or single and infra-axillary, or rarely occupying both positions: primary leaf-rhachis 6 to 31 mm. long; pinnæ 3 to 9 pairs; leaflets 5 to 13 pairs, oblong, 2 to 3 mm. in length: flowers canescent-puberulent or -tomentulose: pods about 6-seeded, usually more or less constricted between the seeds, puberulent or rarely tomentulose, seldom over 5 mm. broad. — Pl. Hartw. 12, in Hook. Jour. Bot. iv. 409, & Trans. Linn. Soc. xxx. 428; Gray, Pl. Wright. i. 61, ii. 51. — Rocky ground on foothills and mountains, W. Texas, *Wright*, to Arizona, *Rothrock*, *Pringle*, *Palmer*, *Toumey:* Mexico, Chihuahua, *Pringle*, no. 367: San Luis Potosi, *Parry & Palmer*, nos. 215, 216; Durango, *Palmer*, no. 328 (with small fruit), 594; Jalisco, *Pringle*, no. 6199; State of Mexico, *Andrieux*, no. 399, *Bourgeau*, no. 486? *Pringle*, no. 6308; Oaxaca, *Nelson*, no. 1571. Variation striking but mostly permiscuous and not yet subject to clear definition.

Var. flexuosa. More slender: branches flexuous or almost geniculate: leaflets minute, 1 to 1.5 mm. long: flowers canescent-tomentulose as in the typical form. — *M. flexuosa*, Benth. in Gray, Pl. Wright. i. 62,

& Trans. Linn. Soc. xxx. 428. — W. Texas, *Wright*, no. 161; New Mexico, *Wright*, no. 1365.

Var. **Lindheimeri**. Inconspicuously puberulent but with flowers nearly or quite glabrous: mature leaflets 3 to 4 mm. long. — *M. Lindheimeri*, Gray, Pl. Lindh. pt. 2, 181; Benth. l. c. 429. — W. Texas, *Lindheimer*. Mr. Pringle's no. 5152 from Michoacan is essentially the same.

* * * Herbs, undershrubs, or soft-woody often scandent shrubs, frequently setiferous or strigose.

← Corolla multistriate.

57. **M. somnians**, H. & B. Undershrub, glabrous to densely glandular-villous, armed with straight scattered usually infrequent spines: pinnæ 2 to ∝ pairs; leaflets 12 to 28 pairs, linear-oblong, 2 to 4 mm. long: pods long-stiped, linear or narrowly oblong, acute, 8–11-seeded, glabrous to glandular-pilose. — H. & B. in Willd. spec. iv. 1036; Kunth, Mim. 20, t. 7; Benth. Trans. Linn. Soc. xxx. 434. *M. palpitans*, H. & B. l. c. *M. somniculosa*, HBK. Nov. Gen. & Spec. vi. 257. *M. acutiflora* & *M. podocarpa*, Benth. in Hook. Jour. Bot. iv. 397. — Widely distributed in Trop. America, and reaching Central America and S. Mexico: Oaxaca, *Nelson*, no. 2723 (smoothish form), no. 881 (glandular form); Guatemala, *Hayes*, and no. 6104 of J. D. Smith's set; Panama, *Seemann*, no. 105.

58. **M. trijuga**, Benth. Unarmed undershrub? pinnæ 3 to 4 pairs: leaflets 30 to 50 pairs: pod glabrous. — Benth. in Hook. Jour. Bot. iv. 398, & Trans. Linn. Soc. xxx. 434. — Tropical America, extending to Panama, *Hayes*, acc. to Benth. from whom the description is compiled.

← ← Corolla not striate: stems strongly angled, and angles armed with short recurved spines.

↔ Canescent-tomentose to glabrous: leaflets obovate or elliptic: spines of the upper part of the stem and peduncles not especially numerous or conspicuous.

59. **M. malacophylla**, Gray. Tomentose: stems 2 to 5 m. long, climbing over shrubs: primary leaf-rhachis 1 to 1.5 dm. long; pinnæ 3 to 6 pairs; leaflets 4 to 6 pairs; distinctly although obtusely pointed, mucronate: pods more or less constricted between the seeds, 5 to 7.5 cm. long, 8 to 10 mm. broad, 5–8-jointed, smooth; valves disarticulating between the seeds. — Pl. Lindh. pt. 2, 182, & Pl. Wright. i. 52; Benth. Trans. Linn. Soc. xxx. 423. — S. W. Texas, in the valley of the Rio Grande, *Wright*, no. 164; Mexico, Nuevo Leon, *Gregg*, no. 207, *Pringle*, no. 1905; Coahuila, *Palmer*, no. 299 (coll. of 1880); Chihuahua, *Bigelow*, no. 319.

Var. glabrata, BENTH. Stems, &c., merely puberulent: leaflets somewhat larger, green and glabrous, mucronate as in the typical form. — Benth, l. c. *M. malacophylla*, var. *glabra*, Gray in Torr. Bot. Mex. Bound. 61 (name only). — On the lower Rio Grande, *Schott*, *Miss Croft*, and earlier at San Fernando, Tamaulipas, *Berlandier*, nos. 815, 2235.

60. M. polyancistra, BENTH. Climbing (?) glabrous shrub: spines small, numerous, recurved: pinnæ 3 to 7 pairs; leaflets 6 to 8 pairs, oblique, obovate-oblong, mucronate. — Trans. Linn. Soc. xxx. 422. — "New Spain," *Pavon*. Description compiled.

↔ ↔ Tawny-tomentose: leaflets oblong: spines on the upper part of the stem and peduncles not conspicuous.

61. M. Ervendbergii, GRAY. Pinnæ about 5 pairs; petiole and primary rhachis 1 dm. long, armed (as in related species) by numerous short recurved spines; leaflets about 12 pairs, 7 to 10 mm. long, 3 mm. broad, acutish at the apex, oblique at the base, discolorous, sordid-tomentose beneath: heads numerous, paniculate; peduncles 2 cm. long, unarmed: fruit unknown. — Proc. Am. Acad. v. 178, in part. *M. costaricensis*, Benth. Trans. Linn. Soc. xxx. 423, ex char. — Wartenberg near Tantoyuca, Huasteca, Mexico, *Ervendberg*, no. 2 (herb. Gray) in part. This species was founded upon mixed material and it is now clear that the specimen to which Dr. Gray referred when he mentioned the young leaves is *M. invisa*, H. & B. Bentham seems never to have understood Dr. Gray's species, referring to it *Schrankia elata*, Mart. & Gal. which from its armed peduncles cannot be the plant here retained as *M. Ervendbergii*, nor from its arborescent habit is likely to have been the other component of Dr. Gray's type. Furthermore Bentham also described *M. costaricensis*, which in all characters mentioned corresponds accurately to *M. Ervendbergii*, as here interpreted. If, as is surmised, *M. costaricensis* proves identical, the range of the species may be extended to Costa Rica, where coll. by *Oersted*, and Guatemala, *Salvin*, acc. to Hemsl.

↔ ↔ ↔ Loosely pubescent: leaflets linear to linear-oblong: upper part of the stem and often peduncles covered with very numerous reflexed stramineous spines.

62. M. invisa, MART. Petioles rather long, copiously armed; pinnæ 4 to 8 pairs; leaflets 12 to 25 pairs, 3 to 4 mm. long, 1 mm. broad: heads in simple elongated terminal raceme; peduncles very short, villous and often armed; heads rose-purple. — Herb. Fl. Bras. 121; Benth. Trans. Linn. Soc. xxx. 436. *M. diplotricha*, Wright in Sauv. Pl. Cub. 34, acc. to Benth. *M. Ervendbergii*, Gray, l. c. in part. *Schrankia*

brachycarpa, Benth. in Hook Jour. Bot. ii. 130, iv. 415. — Tropical America: S. Mexico, Huasteca, *Ervendberg;* Guatemala, nos. 211 & 6105 of J. D. Smith's sets.

A noteworthy form, coll. at Mazatlan, Sinaloa, *Lamb*, No. 329 (distrib. as *M. Ervendbergii*) has straighter spines and longer less pubescent unarmed peduncles.

← ← ← Corolla not striate: pubescence not strigose: spines scattered, not seriate: pods short, 1–3-jointed, narrow, not over 5 mm. in breadth.

↔ Densely villous with long spreading yellowish hairs.

63. M. camporum, Benth. Prostrate, nearly herbaceous, scarcely armed: stipules ovate, striate: pinnæ about 6 pairs; leaflets numerous, narrowly oblong: heads large, many-flowered, oval, including the long stamens 2.5 cm. in diameter; bracts long and conspicuous in the young heads, imbricated, ciliate, tawny-villous: pods 6 to 12 mm. long, 4 mm. broad. — Benth. in Hook. Jour. Bot. ii. 130, iv. 403, *M. flaviseta*, Benth. in Hook. Lond. Jour. Bot. v. 90. *M. æschynomenes*, Benth. Bot. Sulph. 89. — Acaponeta, Tepic, *Rose*, nos. 3116, 3295; Realejo, Nicaragua, *Hinds, Sinclair*, acc. to Hemsl. (Trop. Am.)

↔ ↔ Hispid with a few scattered setose spines, and sparingly pubescent.

64. M. pusilla, Benth. Prostrate annual: pinnæ 1 to 9 pairs, leaflets 6 to 12 pairs, oblong, 4 mm. long, heads small, few-flowered, 6 mm. in diameter; peduncles 1 cm. or less in length: pods 2–3-jointed, setulose on margin or valves, 3 or 4 mm. in breadth. — Bot. Sulph. 90. — Acapulco, *Palmer*, no. 9 (coll. of 1894–1895); Realejo, *Sinclair, Hinds*, acc. to Benth. & Hemsl. Although I have seen no authentic specimens of this species, I cannot doubt that it is represented by Dr. Palmer's specimen.

← ← ← ← Corolla not striate: pubescence usually strigose: pods 1-α-seeded, 8 to 14 mm. broad.

↔ Prostrate, herbaceous or nearly so: leaf-rhachis unarmed: pods 2–4-seeded.

65. M. strigillosa, Torr & Gray. Often rooting at the joints, scarcely or not at all armed: heads large, oval, usually long-peduncled: pods 2.5 cm. in length, oblique at the summit, acutish, setose throughout. — Fl. i. 399; Chapm. Fl. 115. — Pine barrens and hummock lands of Florida, westward to W. Texas: adjacent Mexico, *Berlandier, Gregg, Palmer.*

↔ ↔ Ascending or erect, suffruticose: leaf-rhachis armed with opposite acicular spines between the pinnæ; stipels also spinescent: pods short 1–3-seeded, obovate with broad oblique summit.

66. M. dormiens, H. & B. Whole habit and foliage of the following more abundant species, but softer appressed-villous rather than

strigose pubescence, and strikingly different fruit. — H. & B. in Willd. Spec. iv. 1035; Benth. Trans. Linn. Soc. xxx. 435. *M. humilis*, H. & B. l. c. 1037. *M. intermedia*, Kunth, Mim. 16, t. 6. — Near Tapachula, Chiapas, *Nelson*, no. 3851; Central America, Herb. Pavon, acc. to Hemsl. (Trop. Am.)

↔ ↔ ↔ Ascending or erect, suffruticose: leaf-rhachis usually armed by pairs of spines between the pinnæ; pods oblong, elongated, 4 to 9 cm. in length.

67. **M. asperata**, L. Strigose-hirsute: branches thickish, sub-herbaceous, pithy, armed with scattered or opposite, laterally compressed broad-based brown or light gray spines: pinnæ 4 to 9 pairs; leaflets 12 to 40 pairs, linear-oblong, acutish, crowded, puberulent, ciliolate: peduncles rather stout, 2 to 5 cm. long; pods oblong, rounded and mucronate at the apex, covered throughout by short stiffish upcurved tawny hairs: valves dividing into 15 to 20 short broad segments. — Syst. Nat. ed. 10, 1312; Benth. l. c. 437 (where extensive synonymy is cited); *M. pigra*, L. l. c. *M. polyacantha, hispida,* & *canescens*, Willd. Spec. iv. 1034–1038. *M. pellita*, H. & B. in Willd. l. c. 1037; Kunth, Mim. 27, t. 9. — Widely spread in the tropics of both hemispheres. Mexico, between San Luis Potosi and Tampico, *Palmer*, no. 1037 (coll. of 1878–1879); Jalisco, *W. G. Wright*, no. 1335, *Rose*, nos. 1422, 1564, *Nelson*, no. 4136; Colima, *Palmer*, no. 1377; Vera Cruz, *Bourgeau*, no. 2209, *Nelson*, no. 526, *C. L. Smith*, no. 998; borders of Oaxaca, *Nelson*, nos. 2333, 2856; Guatemala, nos. 1735 and 3294 of J. D. Smith's sets; Panama, *Fendler*, no. 98, *Seemann*, no. 527.

Var. **Berlandieri**. Less pubescent: stems merely strigillose: leaves shorter than in the typical form; pinnæ 4 to 6 pairs; primary rhachis only 3 to 5 cm. long, mostly unarmed: pods sparingly hispid with short more or less strigose hairs, segments of the valves 8 to 15. — *M. Berlandieri*, Gray in Torr. Bot. Mex. Bound. 61; Benth. l. c. 423. — Valley of the Rio Grande, near Matamoras, *Berlandier*, no. 3146; Micos, San Luis Potosi, *Pringle*, no. 3798. Careful search fails to show any significant or constant difference between this and *M. asperata*, which can be regarded as a specific distinction. Mueller's no. 90 from Vera Cruz, Hartmann's no. 519 and Lamb's no. 511 from Sinaloa, show clear transitions to the typical form.

II. REVISION OF THE NORTH AMERICAN SPECIES OF NEPTUNIA.

Neptunia, Lour. (Dedicated to *Neptune* from the preference for aquatic habitat.) — Unarmed aquatic or terrestrial perennials, herbaceous or suffrutescent. Leaves bipinnate, more or less sensitive; leaflets small, oblong, sometimes glandular at the base. Flowers small, aggregated in dense globose, ovoid, or short-cylindric heads; the lowest flowers frequently sterile and with each filament broadened into a conspicuous linear-lanceolate yellow lamina. Fruit strongly compressed, several-seeded, more or less stipitate. — Fl. Cochinch. 653; Benth. in Hook. Jour. Bot. iv. 354–356, & Trans. Linn. Soc. xxx. 383–385; Coult. Contrib. U. S. Nat. Herb. ii. 95, *Desmanthus* § *Neptunia*, DC. Prodr. ii. 444. *Hemidesmas*, Raf. Sylv. Tell. 119. — About 9 species of the warmer parts of both Old and New World.

N. OLERACEA, Lour. l. c. 654, a tropical floating species with enlarged spongy stems (often 1 cm. thick) has been thought to occur in Texas, see Griseb. Fl. W. Ind. 217, but no specimens from the U. S. have been available. (Mex., *Rovirosa*, W. Ind., S. Am., Tropics of Old World.)

* Heads large, subcylindric, about 50-flowered: lower flowers more often uniform with the rest: bracts lanceolate, inconspicuous.

N. lutea, BENTH. Pubescent with rather fine weak spreading hairs: stems prostrate, branched, 9 to 15 dm. long: leaves with 3 to 5 pairs of pinnæ; leaflets 8 to 16 pairs, rounded at the ends, pubescent and ciliolate, 3 to 7 mm. long; stipules small, ovate-lanceolate, chestnut-colored: peduncles axillary, 5 to 7.5 cm. in length, 12 to 16 mm. in breadth, commonly pubescent, 3–9-seeded; stipe often 8 mm. long. — Benth. in Hook. Jour. Bot. iv. 356, & Trans. Linn. Soc. xxx. 384. *Mimosa virgata*, Batr. Trav. 421, acc. to Wats. Bibl. Index, 244. *Acacia lutea*, Leavenw. Am. Jour. Sci. vii. 61, acc. to Torr. & Gray, Fl. i. 403, but originally described as glabrous and with shorter peduncles. *Darlingtonia virgata*, Raf. New Fl. pt. 1, 43, acc. to Wats. l. c. — Moist and clayey soil, S. Missouri, *Bush*, to Texas, "Alabama, *Leavenworth*," and Florida, *Leavenworth*, but apparently rare southeastward. Var. TENUIS. Closely similar but with stems and peduncles nearly or quite glabrous. — *N. tenuis*, Benth. ll. cc. — Texas, *Drummond*, no. 150 of 3rd collection, *Berlandier*, no. 1602 near Austin and no. 1851, also *Lindheimer*, no. 48, and *Hall*, at Hemstead, no. 178.

** Heads considerably smaller, ovoid, about 20-flowered; the lowest flowers often with yellow petaloid filaments: bracts ovate, acuminate.

+ Bracts and calyx-lobes ciliolate.

N. pubescens, BENTH. Habitally similar to the preceding, finely pubescent or at length only glandular-roughened: pinnæ only 2 or 3 pairs but leaflets more numerous (15 to 35 pairs), ciliolate upon the margin but not otherwise pubescent; stipules larger than in the preceding species, ovate, acuminate, yellowish-brown or greenish: legumes rather short and broad (about 10 mm. in breadth), 3–8-seeded, more or less pubescent; the stipe only a line or two in length. — Benth. in Hook. Jour. Bot. iv. 356, & Trans. Linn. Soc. xxx. 384 (excl. pl. of Florida and perhaps of W. Ind.); Coult. l. c. *N. lutea*, Torr. Bot. Mex. Bound. 60, in part, acc. to Wats. Bibl. Index, 244. — S. and W. Texas, from Corpus Christi Bay, *Palmer*, to Eagle Pass, *Havard*, and perhaps farther westward, *Wright*, (Mex., W. Ind.). This of all our plants appears to correspond most closely to specimens from Peru whence the species was originally described.

N. Lindheimeri. Diffusely branched from a lignescent base, conspicuously and persistently pubescent: pinnæ 3 to 5 pairs; leaflets 15 to 30 pairs, strongly ciliated on the margin and also pubescent upon the lower surface, especially near the apex; stipules, bracts, and even the calyx-lobes conspicuously ciliated: fruiting peduncles 2.5 to 6.5 cm. long: pods regularly oblong, cuneate at the base, 2.5 to 3.8 cm. long, 8 mm. broad, more or less pubescent even in age, 3–10-seeded; stipe about 4 mm. long. — *N. lutea*, Heller, Contrib. Herb. Frankl. & Marsh. Coll. i. 45, not Benth. — Prairies of Texas, about Houston, *Lindheimer*, June, 1843, Texas without locality, *Wright*, and near Corpus Christi, *Heller*, no. 1822.

++ Bracts and calyx-lobes not ciliolate.

N. floridana, SMALL. Very slender and apparently very sensitive: stems branched, 6 dm. or more long, prostrate, glabrous: pinnæ 3 to 4 pairs; leaflets numerous (15 to more often) 20 to 40 pairs, ciliolate but not otherwise pubescent: peduncles long, at anthesis often hooked at the apex, in fruit 7.5 to 10 cm. in length: bracts and calyx-teeth quite devoid of ciliation: pods about 3.2 cm. long, 6 mm. broad, sparingly pubescent when young, soon glabrate, 7–9 seeded; stipe 2 to 6 mm. in length. — Bull. Torr. Club, xxv. 138. *N. pubescens*, Benth. Trans. Linn. Soc. xxx. 384, in part (as to pl. Rugel). *N. lutea*, Chapm. Fl. ed. 1 & 2, 117, at least in part, not Benth. *Acacia lutea*, Torr. & Gray, Fl. i. 403, as to pl. from Florida. *Desmanthus luteus*, Chapm.

Fl. ed. 3, 128, at least in part, not Benth. — Florida, St. Marks, *Rugel*, 1843; Apalachicola, *Chapman;* Miami, *Garber*, 1877; rocky pine woods between everglades and Biscayne Bay, *Curtiss*, no. 726; hummock land in clayey soil, near Eustis, *Nash*, no. 686; also collected in Mississippi at Ocean Springs, *Pollard*, no. 1104 (distrib. as *Acuan Illinoensis*), and in Louisiana, *Hale*. (St. Domingo, *Eggers*, no. 2552; Cuba, *Wright;* S. Am.?) Chiefly distinguished by its elongated peduncles and unciliated calyx.